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Division of  
Water Resources

Illinois

# FLOODPLAIN MANAGEMENT RECONNAISSANCE STUDY REPORT

## MANLIUS BUREAU COUNTY



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245 ~~00~~ VILLAGE OF MANLIUS ,

BUREAU COUNTY, ILLINOIS A ; A

\*b FLOODPLAIN MANAGEMENT

RECONNAISSANCE STUDY A / A

\*c Prepared By

U.S. Department of Agriculture  
Soil Conservation Service  
Champaign, Illinois A ; A

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March 1985



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VILLAGE OF MANLIUS  
RECONNAISSANCE STUDY

INTRODUCTION

Use of floodprone areas can be a severe problem in Illinois. Urbanization and floodplain encroachment are increasing the severity of this problem. Over 800 communities in Illinois have been identified as having flooding problems.

The Illinois Division of Water Resources (DWR) is the responsible state agency for urban flood control and for setting priorities of flood studies within urban areas. The Soil Conservation Service is providing assistance to the Division of Water Resources in setting these priorities. A joint coordination agreement was executed between the Division of Water Resources, State of Illinois, and the USDA, Soil Conservation Service on April 30, 1976 and revised in December 1978 to furnish technical assistance in carrying out Flood Hazard Studies. These studies are carried out in accordance with Federal Level Recommendation 3 of "A Unified National Program for Flood Plain Management," and under Section 6 of Public Law 83-566. A plan of study was executed in October 1984 for reconnaissance studies for 9 Illinois communities. These reconnaissance studies will utilize existing floodplain information, historical high water profiles, and the 100 year floodplain from flood insurance studies when available. Average annual damages are estimated for the structures within the floodplain.



This study was conducted and the report provided for the purposes of:  
1) To evaluate needs for additional future studies, 2) to estimate average annual damages, 3) to provide an updated estimate of the 100 year floodplain and map, and 4) to provide guidance and recommendations to the community for improved floodplain management.



## STUDY AREA DESCRIPTION

The Village of Manlius is located in Bureau County, Illinois. It is located 11 miles west and 5 miles north of Princeton. The population of Manlius is 439, according to the 1980 census.

Transportation facilities within the Manlius area consist of the Chicago and Northwestern Railroad, Illinois State Route 88, and Interstate Route 80, five miles to the south. The use of county blacktop roads connects the village to other communities and state highways in the immediate area.

The community is located in an area that is mainly agricultural, with very few trees in the vicinity. Several small open drainage ditches, some man made, are used to drain the agricultural land. These ditches have few, if any, trees growing on their banks, and are cleaned out periodically to keep the drainage working on the agricultural land.

Due to the more intense cropping systems of the present times, runoff from the moderately rolling farm ground is more rapid than it once was. With very little wheat, oats, and legumes in the rotation, the runoff rate has been accelerated. Fall tillage, including moldboard plowing, is still being done at a rate that is leaving the soil in a manner that can be highly erosive for fall, winter, and spring runoff.

The main floodwater problems to the Village of Manlius are caused by agricultural runoff from the watershed of Hickory Creek and East



Tributary, flowing into Hickory Creek. Where they merge close to Second Street, their combined drainage area is 11.3 square miles. Hickory Creek, which has most of the problems, has a drainage area of 8.1 square miles. Hickory Creek eventually flows to the Green River. The drainage is in the Mississippi River Basin, Hydrologic Unit #07090007, Hickory Creek subwatershed #020. (Hickory Creek has several legal drainage districts and one flows through Manlius.)

In general, the watershed above Manlius is flat to gently rolling. The area is mainly cultivated fields with very few pastured fields. Annual precipitation for the area is normally 33 inches. Annual snowfall averages 25 to 27 inches. More than 20 inches of snow has fallen in a single month on several occasions.

Almost the entire watershed is rural in nature with very little, if any, development anticipated in the foreseeable future. Only the area on the east side of the village has experienced any recent development. This development consists entirely of residential areas. It is doubtful that industry will develop in the community at this time.

The soils in the community of Manlius are Saybrook, Catlin, and Sable, with Sable only along the ditches that run through the village. Saybrook and Catlin have very good drainage and have only slight problems for home and road construction. The soils above the community include Plano, LaRose, Parr, and Waupecan. These are mainly





silt loam soils ranging in slope from 0 to 12 percent, with most in the 2 to 7 percent range. With the exception of LaRose, these fall into the prime farmland soils category. At the present time, Bureau County has a soil survey in progress.

#### NATURAL VALUES

The Village of Manlius is located in an area of the state that is mainly corn and soybean country. While several ditches are in the vicinity, they are used mainly for agricultural drainage purposes with a minimum amount of wildlife cover. Very few actual fence rows are left, and pastures, if present, are usually fairly small and located near farmsteads.

The presence of small isolated wooded and grassy areas help provide a varying quality riparian habitat, as well as, important travel routes for wildlife. The variety of plant and animal species present generally make the area a pleasant place for people to live, work, and play.



## FLOOD PROBLEMS

Flooding along Hickory Creek and East Tributary is generally the result of local, heavy rainfalls and could occur during any part of the year. Since most of the flooding is due to heavy rainfalls over a relatively small watershed, flooding is generally of short durations. According to local residents, only two flooding events have occurred in the last eighteen years, with neither event causing major losses.

The village does not have a sanitary waste disposal system. Each home or business must rely on a septic system to function properly. During heavy rains or prolonged wet periods, these systems do not function properly. The soils in the community, Saybrook and Catlin, have only moderate limitations for septic tank filter fields, but must drain down and through the Sable soil which does have severe problems. Due to the high water table of the Sable soil, temporary flooding can be a problem during intense or prolonged rainy periods. Some of the older systems may not have a filter field and these systems if open, would drain to the existing ditches.

Even though the village does not have a storm sewer system, there does not seem to be any problems with ponding water. The natural ground level and/or soil types present, permit the runoff from the village to escape without ponding problems. During heavy rainfalls or wet periods, water may back up for a few hours along the existing ditch channels, but in time, natural drainage takes place and the water recedes to the normal level.



The village has a water supply system with an ample supply of water provided by two wells. The location of the pumps for the wells are several feet above the elevation of the ditch bottoms, and not subject to any runoff or flooding problems.

According to local residents, two or three inches of rainfall are required to fill the existing ditches. Approximately four inches of rainfall are required to cause out of bank flow in the ditches. With rainfalls larger than four inches, flooding can affect several properties.

When the ditches are at or near capacity flow, some problems are caused by water backing up through the basement drains. Several homes with basement drains can stop this problem by "shutting off" their drainage systems during high water. If the residents are not at home during these periods to handle the basement drain shut off, damages may become fairly large.

At the north edge of the village, Hickory Creek runs along the edge of a farmstead. The farm lot is used as a small pasture, with several buildings fairly close to the ditch that have the potential for flooding during the larger storms. North of the farmstead, tile and other



materials which are stored in the open and close to the ditch, are subject to water damages.

The northwest side of Manlius could possibly have a drainage problem where surface runoff collects in an area near a fairly new apartment complex. From this point, the runoff goes into the grain elevator storage area. An existing seven door shed seems to be affected as materials have been placed on pallets to get them off of the ground for floodwater protection.

#### PROBLEM SUMMARY

Estimated average annual damages from floodwaters to the problems listed above are as follows:

<u>NUMBER HOMES OR TRAILERS</u>	<u>NUMBER GARAGES AND SHED</u>	<u>BUSINESS</u>	<u>TOTAL VALUE</u>	<u>AVERAGE ANNUAL DAMAGES</u>
9	22	2	\$851,000	\$5,600

Additional Damages due to flood related problems:

Approximately 47 additional wet basements:	1,200
Outside Air Conditioning Units:	50
Street Maintenance:	550
Yard Damages:	<u>1,000</u>

Total Additional Expense \$2,800





Total estimated average annual damages for the Village of Manlius equals \$8,400. Flood damage starts at the 10 year frequency storm.

#### EXISTING FLOODPLAIN MANAGEMENT

The Village of Manlius has participated in the regular phase of the National Flood Insurance Program since January 28, 1983. Business and home owners may purchase flood insurance. The village does require building permits. They also have zoning ordinances in effect.

The existing Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map is not correct. The ditches are not shown in the correct locations, making the shown 100 year floodplain area incorrect. This map, dated January 28, 1983, has been discussed with the Division of Water Resources and corrections will be made to the FEMA map.



## RECOMMENDATIONS

It is recommended that the Village of Manlius continue to participate in the National Flood Insurance Program.

Because of the poor basement drainage situations, automatic valves should be placed on existing basement drains.

Construction in areas by the existing ditches should be regulated or restricted for crawl spaces, one-half and full basements because of potential water problems.

A channel maintenance program should be adopted by the village. Implementation of this program will keep the ditches free of trees, brush, and debris, while also maintaining existing road culverts for optimum flows.

Waste water from washing machines should not be outletted through the basement drains since these drains eventually outlet into the existing ditches. All waste should drain into the existing septic systems.

Existing septic systems must be kept in proper working condition to avoid possible health hazards. Any new systems constructed should have an adequate filter field attached to the septic system. Correct procedures for installing this type of system may be obtained from the



local Soil and Water Conservation District office and the County Health Department.

The village at some date may need to install a sewage disposal system. This would help alleviate the waste water problem from basements, as well as, the existing septic tank problems.

A low priority should be assigned for future detailed floodplain management studies in Manlius.



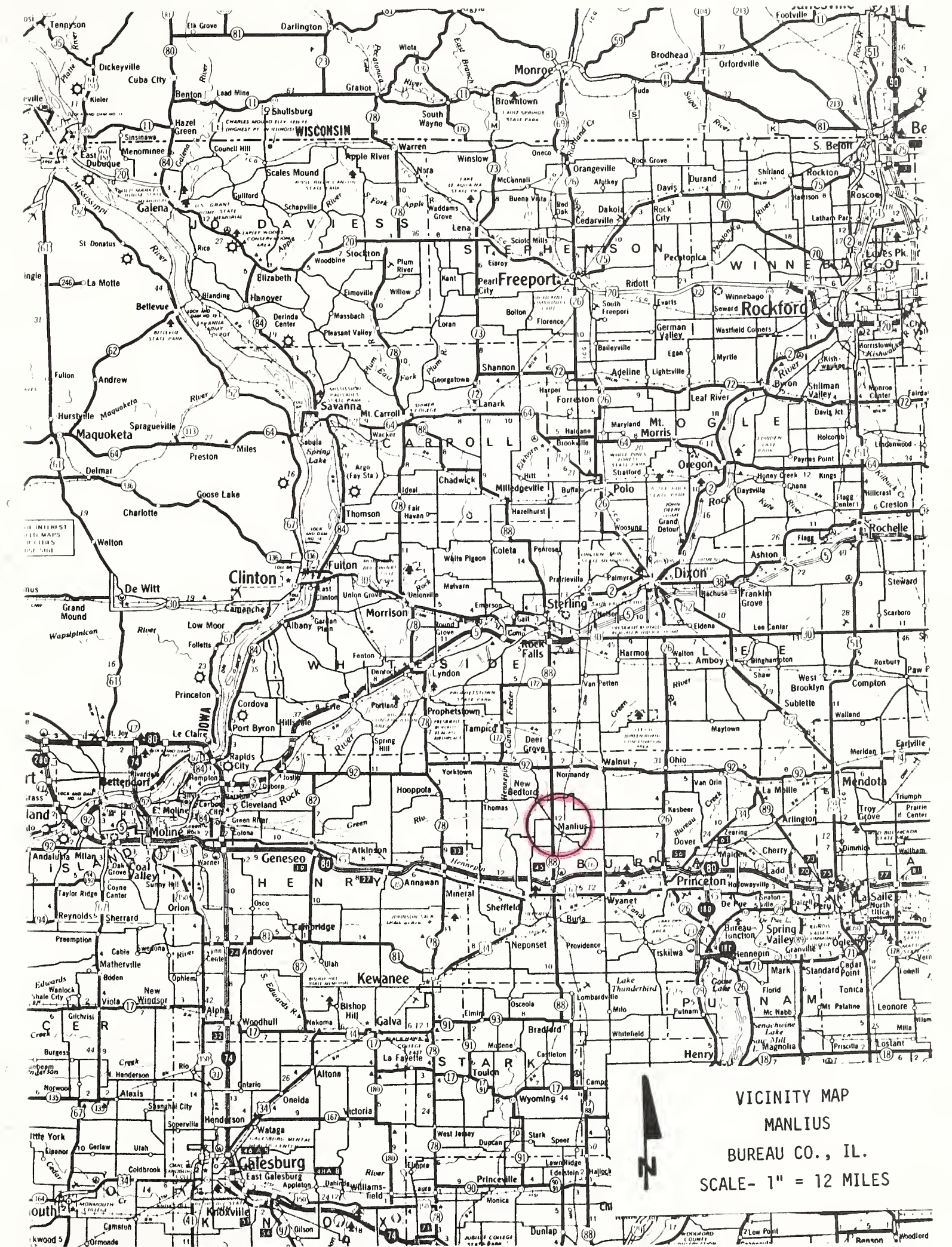
## INVESTIGATION AND ANALYSIS

No additional calculations, discharges, or profiles were made as a part of this study. The inventory of flooding and water problems is based on a field review and interviews with local citizens. The Flood Hazard Boundary Map, along with interviews with local citizens, was used to determine the 100-year floodplain. Aerial photographs were provided by DWR. Damages were based on property value estimates during field review, and the application of damage factors. These factors came from previous detailed floodplain management studies.

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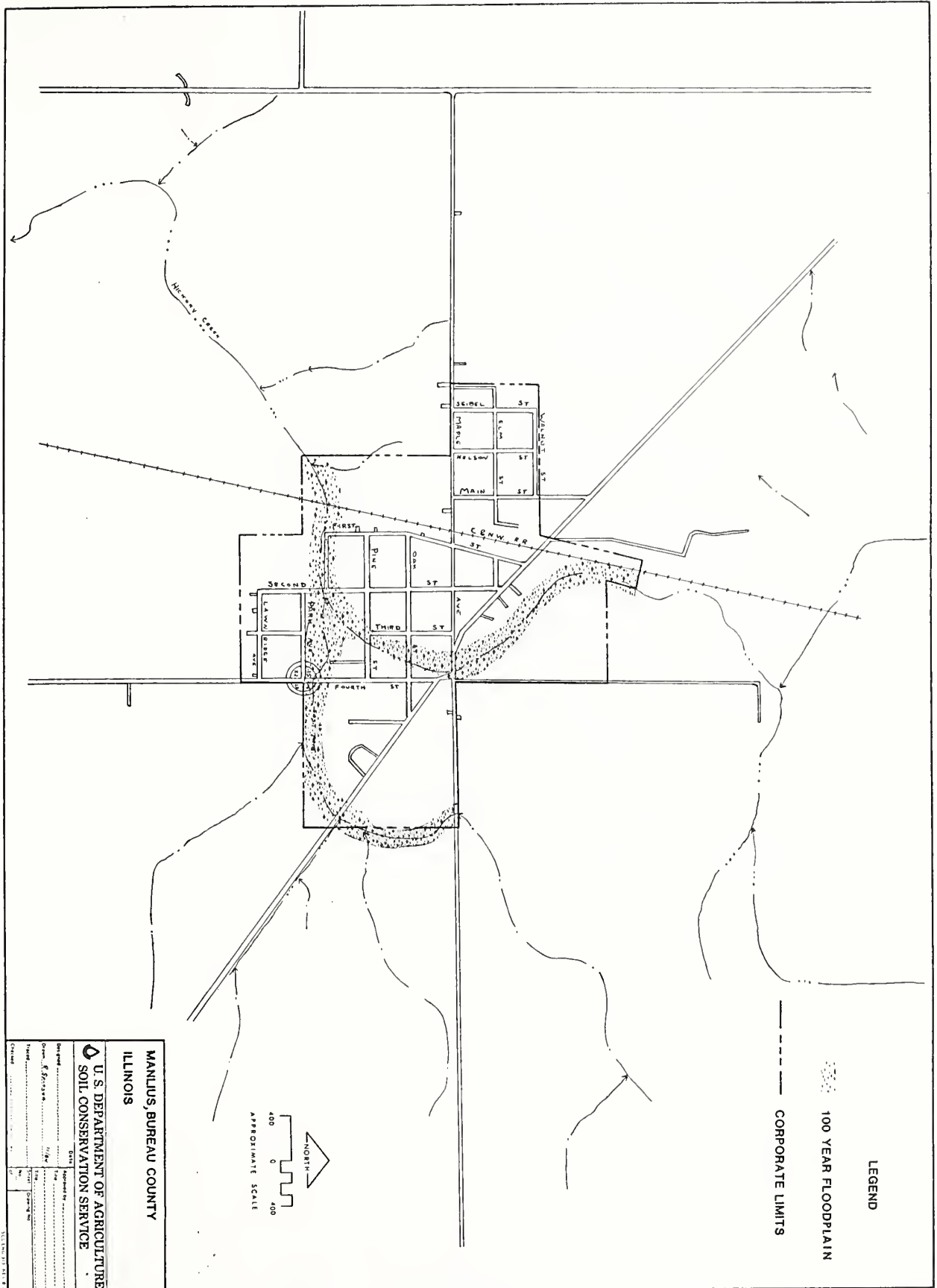






VICINITY MAP  
MANLIUS  
BUREAU CO., IL.  
SCALE- 1" = 12 MILES









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